

REMARKS

I. Summary of the Examiner's Action

A. Claim Rejections

As set forth in paragraph 3 on page 2 of the July 24 Office Action, claims 1 – 2, 8 – 14 and 20 – 24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 6,320,173 B1 to Vock (hereinafter “Vock” or “the Vock patent”).

As set forth in paragraph 5 on page 7 of the July 24 Office Action, claims 1 – 6 and 13 – 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,654,056 B1 to Perregaux (hereinafter “Perregaux” or “the Perregaux patent”) in view of United States Patent No. 6,654,056 B1 to Ang (hereinafter “Ang” or “the Ang patent”)

As set forth in paragraph 6 on page 11 of the July 24 Office Action, claims 1 – 2, 7, 13 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,596,979 B2 to Hou (hereinafter “Hou” or “the Hou patent”) in view of the Ang patent.

These rejections are respectfully disagreed with, and are traversed below.

II. Applicants' Response

A. Claim Rejections

1. Rejection of Claims 1 – 2, 8 – 14 and 20 – 24
under 35 U.S.C. § 102(b)

Applicants reproduce claim 1 here as a convenience to the Examiner (emphasis added):

1. A method for locating a position of a feature in a scene, comprising the steps of
- forming an image of the feature using a segmented array having a plurality of array subelements each having a linear dimension, wherein each of the array subelements has an output signal; and
- cooperatively analyzing the output signals from at least two spatially adjacent array subelements
- to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements, and
- to reach a conclusion from the data set as to a location of the image of the feature on the segmented array with an accuracy of less than the linear dimension of an array subelement when the output signal is produced from more than one of the adjacent array subelements.

Applicants respectively submit that Vock is seen neither to describe nor suggest the emphasized subject matter of claim 1.

As described previously, Applicants' invention is concerned with determining the position of an image on a segmented array to an accuracy of less than the linear dimension of an array subelement using a data set "reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent subelements", in other words, the image may be so large that it overlaps two adjacent subelements. The relied-upon portions of the Vock patent appearing at Column 7, lines 33 – 40 and Column 3, lines 13 – 25 simply do not describe operations with sufficient particularity to determine whether the claimed operations are performed.

In addition, a portion of the Vock patent that is concerned with the position of an image describes a situation where the image of the object (in this instance a golf ball) is much smaller than the IFOV of a detector element. Accordingly, the operations show no appreciation for Applicants' invention as claimed and in fact teach a different method as is apparent from the description at column 10, lines 9 – 45. In the method of Vock since the image of the golf ball is so small it is necessary to track the trajectory of the ball through several pixels as described at column 10, lines 40 – 46 (emphasis added):

"There is also a positional uncertainty for a ball that is imaged to within a given pixel (that is, a ball's position is to first order, known only to within the IFOV). In a preferred embodiment of the invention, therefore, sub-pixel resolution is achieved by considering the ball's track through several pixels, and/or frames, and extracting the most likely position of the ball within a given pixel based upon that track."

In other words, the method of Vock uses a data set drawn from *non-adjacent* pixels to determine the position of the golf ball. This operates in a different manner from Applicants' invention as claimed, since it operates in a situation where the image of the golf ball is much smaller than the IFOV of a detector. Since each and every limitation in an anticipation rejection has to be found in the relied-upon reference, Applicants respectfully request that the Examiner in a non-final action identify with particularity where exactly the claimed operations of Applicants' invention are either described or suggested in Vock. The non-specific portions relied upon the Examiner and the other portions referred to above of Vock which teach a different method simply are insufficient to support an anticipation rejection where very specific operations are claimed.

Vock does mention one instance where a golf ball is about the size of an IFOV of a detector, but the situation is identified as a problem and Vock shows no appreciation for Applicants' solution to the problem as demonstrated at column 13, lines 7 – 20 (emphasis added):

“The analysis above neglects certain key factors, such as: diffraction, ball motion, ball images that cross between two detectors, simultaneous imaging of two balls crossing within the field of regard, optical blur and defocus, and similar effects. At image 142d, for example, the ball image and pixel dimensions are approximately equal. At this special condition, neither technique works particularly well. Nevertheless, there are acceptable solutions to these problems: a combination of the above techniques can be used, the distancing data can be ignored for selected failure conditions, diffraction effects can be included by summing adjacent detectors, and estimation routines can ‘bridge’ certain data by

considering past data, future expected data, and certain physical constraints.”

Applicants respectfully note that the emphasized portion of Vock specifically mentions the situation where the ball image and pixel dimensions are about the same size and cross between two detectors, but shows no appreciation for Applicants’ method “to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements, and to reach a conclusion from the data set as to a location of the image of the feature on the segmented array with an accuracy of less than the linear dimension of an array subelement when the output signal is produced from more than one of the adjacent array subelements” as is required by claim 1. Applicants submit that in view of the lack of “follow through” here where the predicate problem solved by Applicants is identified but no mention is made of Applicants’ solution, it is improper, particularly in view of the anticipation standard, to merely assume that Vock discloses Applicants’ invention. If the Examiner cannot point to a specific portion that explicitly describes Applicants’ invention, the Examiner has to go beyond mere assumption and identify specifically what portions of Vock support an inherency argument. Merely assuming that Applicants’ method would naturally be practiced is not enough without specific support in Vock and argumentation.

Applicants therefore respectfully request that the rejection of claim 1 on this basis be withdrawn. Applicants also request that the rejection of independent claims 13 and 24

be withdrawn for reasons similar to those set forth above with respect to claim 1, and for reasons having to do with their independently-recited features. Applicants further request that the rejection of dependent claims 2, 8 – 12, 14 and 20 – 23 be withdrawn both because these claims depend from allowable claims and because of the independently-recited features of these claims.

2. Rejections under 35 U.S.C. § 103(a)

Applicants respectfully submit that Ang is not seen to remedy the now-admitted deficiencies of the Perregaux and Hou patents. The Examiner is construing read-out functions performed by scanners as “cooperatively analyzing the output signals from at least two spatially adjacent array subelements...” The Examiner is confusing imaging operations with sensor/image analysis operations. The read-out operations of a two-dimensional imager preserve the relative positions of picture elements (“pixels”) as must be well-known by the Examiner. It is not necessary to analyze adjacent pixels to accurately reproduce an image created by a two-dimensional imager – the read-out operation that transfers the pixel samples from the imager to memory already does this. Accordingly, it strains credulity when the Examiner states at page 7, line 20 – page 8, line 4 that:

“For example, the microprocessing functions performed by the ‘CMOS active pixel color linear image sensor’ in FIG. 3 of Ang (U.S. Patent No. 6,507,011 B2) such a line control/readout logic (320), line store select logic (33), timing control logic (370) and analog mux (350). It would have been obvious to one skilled in the art to provide a device capable of cooperatively analyzing adjacent array subelements and

determining feature locations for the purpose of reconstructing (from memory) the imaged features for image reproduction.”

Quite frankly, the Examiner apparently is forgetting that the disclosure should be viewed from the perspective of one skilled in the art unconcerned with any fear of allowing overly-broad claims. Although Applicants’ understand that claim terminology and other prosecution material are typically given their broadest reasonable construction, the construction nonetheless has to be reasonable and accord with how one skilled in the art would understand the materials. One skilled in the art would know that the operations in Ang referred to by the Examiner have as their purpose the goal of keeping sampled pixels from a two-dimensional imager separate from one another so that an accurate image is reproduced. One skilled in the art would not assume that this required some image analysis as in the case of Applicants’ invention since the read-out operations. In the first instance the desire is to keep the pixels separate from one another!

Applicants therefore respectfully request that the rejection of claim 1 on this basis be withdrawn. Applicants also request that the rejection of independent claims 13 and 24 be withdrawn for reasons similar to those set forth above with respect to claim 1, and for reasons having to do with their independently-recited features. Applicants further request that the rejection of dependent claims 2 - 7 and 14 - 19 be withdrawn both because these claims depend from allowable claims and because of the independently-recited features of these claims.

III. Conclusion

The Applicant submits that in light of the foregoing remarks the application is now in condition for allowance. Applicant therefore respectfully requests that the outstanding rejections be withdrawn and that the case be passed to issuance.

Respectfully submitted,

November 24, 2008 David M. O'Neill

Date

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Nov. 24, 2008

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